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09/656,393	09/06/2000	Kenneth M. Levine	24379	9357

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EXAMINER

BOYCE, ANDRE D

ART UNIT	PAPER NUMBER
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3623

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/656,393

Applicant(s)

LEVINE ET AL.

Examiner

Andre Boyce

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. This Non-final office action is in response to Applicant's amendment filed March 26, 2004. Claims 1, 7, 9-12, 18-26, 32, 34-37, 42, 43, and 46 have been amended. Claims 1-49 are pending.
2. The previously pending objections to claims 17 and 42 have been withdrawn.  
  
The previously pending rejections to claims 1-49 under 35 USC § 112 have been withdrawn.
3. Applicant's arguments, filed March 26, 2004, including the declaration under 37 CFR 1.131, have been fully considered and are persuasive.
4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 102***

5. Claims 1, 4, 6, 9, 10, 12-19, 22, 23, 43, 45, and 48 are rejected under 35 U.S.C. 102(e) as being anticipated by Mahapatro (USPN 6,571,215).  
  
As per claim 1, Mahapatro disclose a computer implemented method for managing mobile workers (assignment oriented scheduling, column 7, lines 48-50) in an object oriented programming environment (processes and

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symbolic representations of computer operations including objects, column 8, lines 14-18 and 44-46) comprising the steps of: classifying within a database of a computer a plurality of target objects corresponding to facilities assets to be worked on by a mobile worker (process 2: generating assignments based on the tasks and resources assigned to those tasks, column 13, lines 12-17); defining the attributes of each target object, including the tasks to be performed on each target object (breaking each task into component assignments, wherein component assignments identify the parent task and the assigned resource, column 13, lines 30-33); scheduling mobile workers for the tasks to be performed on target objects by running a rule engine to determine the algorithms (scheduling assignments via an algorithm, column 14, lines 20-22) and heuristics to be used to schedule mobile workers for the tasks to be performed (employ heuristics to assign a priority-order, column 16, lines 35-37); and outputting a schedule of jobs to the mobile workers (display schedule, process 4, figure 3).

As per claims 4 (and 29), Mahapatro disclose the step of building a plurality of user configured system agents for one of at least automating work planning, scheduling tasks to workers (scheduling constraints incorporated into the preferred program, column 12, lines 51-54), dispatching workers, stores management, job state management or end-of-shift management.

As per claims 6 (and 31), Mahapatro disclose the rule engine determines a primary scheduling algorithm and parameters to be used for scheduling jobs

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to workers (algorithm used in grouping the assignments based on scheduling constraints, column 14, lines 20-22).

As per claims 9 (and 34), Mahapatro disclose the primary scheduling algorithm comprises a scheduling algorithm that assigns jobs to workers that maximize the job's utility (algorithm utilized in grouping assignments based on higher task priority, column 14, lines 22-26).

As per claims 10 (and 35), Mahapatro discloses the unassigned job queue (group assignment) is ordered from the highest utility to the lowest utility (assignments with a high priority placed in a first group, with medium priority in a second group, and low priority placed in a third group, column 14, lines 25-29).

As per claims 12 (and 37), Mahapatro disclose the algorithm comprises a rescheduling algorithm that is operable by determining the utility of unassigned jobs and rescheduling the assigned jobs, replacing some assigned jobs with unassigned jobs on workers' schedules, based on an added utility (unscheduled assignments for a current resource that have higher priority than the current assignment, column 16, lines 24-27).

As per claims 13 (and 38), Mahapatro disclose the step of maintaining a historical database (local hard drive 20 used to store data and programs, figure 1) that reflects all changes in system configuration, including targets and tasks, based on running system agents and on user interactions.

As per claims 14 (and 39), Mahapatro disclose the step of viewing status and changes of task, system agents and schedules of jobs within a business viewer (monitor 31, figure 1).

As per claims 15 (and 40), Mahapatro disclose the step of maintaining a system log of all activities (local hard drive 20 used to store data and programs, figure 1).

As per claims 16 (and 41), Mahapatro disclose the step of maintaining a policy database that allows users to configure system agents and a plurality of use cases corresponding to human and system interaction and definitions (application programs 37 including scheduling program, column 10, lines 44-48).

As per claims 17 (and 42), Mahapatro does not explicitly disclose the step of building definitions of targets and their tasks, according to the classification of the targets as templates, and using the templates to create each individual target of the classification (tables providing pertinent information concerning group assignments including priority, task, and resources, figure 7).

As per claim 18, Mahapatro disclose a computer implemented method for managing mobile workers (assignment oriented scheduling, column 7, lines 48-50) in an object oriented programming environment (processes and symbolic representations of computer operations including objects, column 8, lines 14-18 and 44-46) comprising the steps of: classifying the attributes of each target object, including the tasks to be performed on each target object (process 2: generating assignments based on the tasks and resources

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assigned to those tasks, column 13, lines 12-17); building user configured system agents and software components that automate the system environment for managing mobile workers (scheduling constraints incorporated into the preferred program, column 12, lines 51-54); scheduling mobile workers for the tasks to be performed on target objects by running a rule engine to determine the algorithms (scheduling assignments via an algorithm, column 14, lines 20-22) and heuristics to be used to schedule mobile workers for the tasks to be performed (employ heuristics to assign a priority-order, column 16, lines 35-37); configuring system agents and software components with user configured settings of a policy database that are reflective of a particular business (resource information including work types, column 12, lines 6-13); and outputting a schedule of jobs to the mobile workers (display schedule, process 4, figure 3).

As per claim 19, Mahapatro disclose the step of updating the policy database interactively wherein the system agents and other software components update their actions based on the present contents of the policy database (additional resource information incorporated into program in order to further describe resource, column 12, lines 10-13).

As per claim 22, Mahapatro disclose a method of managing mobile workers (assignment oriented scheduling) comprising the steps of: creating a job classification (assignments) within a planning agent module of a computer corresponding to a collection of tasks to schedule, and the worker skills and material required to complete the tasks (process 2: generating assignments

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based on the tasks and resources assigned to those tasks, column 13, lines 12-17); based on a plurality of rules contained within a rule engine, matching the worker skills with the tasks to be scheduled (identification of the assigned resource based on resource information/limitations, column 12, lines 6-10 and column 13, lines 30-33); and outputting a schedule for mobile worker management (display schedule, process 4, figure 3).

As per claim 23, Mahapatro disclose the step of matching worker skill resources with the demands of a job within a scheduler agent of the computer (assignment limit, table 1).

Claims 43, 45, and 48 are rejected based upon the rejection of claims 1, 4, and 16, respectively, since they are the system claims corresponding to the method claims.

### ***Claim Rejections - 35 USC § 103***

6. Claims 2, 3, 5, 7, 8, 24, 25, 44, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahapatro, in view of Lesaint et al (USPN 6,578,005).

As per claims 2 and 3 (27 and 28), Mahapatro does not explicitly disclose classifying the plurality of target objects within a server computer and outputting the schedule to a client computer operated by a mobile worker and communicating with a mobile worker via a telecommunications link and a hand-held, web based device. However, Mahapatro does disclose a client/server configuration, including a remote computer 11 (figure 1).



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Further, Lesaint et al disclose hand-held terminals able to communicate via telecommunications network N (column 6, lines 58-63). Both Mahapatro and Lesaint are concerned with efficient job scheduling, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the client/server configuration and hand-held web devices in Mahapatro, as seen in Lesaint, as an effective means of communicating with the workers in Mahapatro system.

As per claims 5 (and 30), Mahapatro does not explicitly disclose the rule engine comprises a forward chaining rule engine with different rule sets for each system agent. Lesaint et al disclose a deterministic rule-based pre-scheduler (column 10, lines 14-17), wherein the tasks are constructed based upon constraints from the rule store 35 (i.e., forward chaining, column 10, lines 26-29). Both Mahapatro and Lesaint are concerned with effective job scheduling, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a forward chaining rule engine in Mahapatro, as seen in Lesaint, thereby creating a more flexible system in Mahapatro, including various rule sets.

As per claims 7 and 8 (32 and 33), Mahapatro does not explicitly disclose the primary scheduling algorithm comprises a brute force scheduling algorithm and a round robin scheduling algorithm. Lesaint et al disclose systematic techniques that explore every possible permutation and genetic algorithm techniques that attempt combinations of optimum solutions found so far (column 15, lines 28-35). Mahapatro discloses the algorithm taking on

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any form and varying with the number and types of scheduling constraints (column 14, lines 20-22), therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include various algorithms in Mahapatro, as seen in Lesaint, thereby making the Mahapatro system more efficient.

As per claim 24, Mahapatro does not disclose the step of tracking the location and status of a workforce via a dispatcher agent of the computer. Lesaint discloses a technician status register 43 updateable from technician interface (column 11, lines 19-22). Both Mahapatro and Lesaint are concerned with efficient job scheduling, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include tracking the worker in Mahapatro, as seen in Lesaint, thereby being able to effectively modify scheduled resources in real-time.

As per claim 25, Mahapatro does not disclose the step of issuing system events within the computer and determining how the status of active job agents within the computer respond via a job state manager agent contained within the computer. Lesaint discloses a real-time modifier 40 that takes into account changes within the system (column 25, lines 21-24). Both Mahapatro and Lesaint are concerned with efficient job scheduling, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include issuing system events within the computer in Mahapatro, as seen in Lesaint, thereby providing an effective way to manage system changes.

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Claims 44, 46, and 47 are rejected based upon the rejection of claim 2, 7, and 8, respectively, since they are the system claims corresponding to the method claims.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mahapatro.

As per claims 11 (and 36), Mahapatro does not explicitly disclose the unassigned job queue is ordered the lowest utility to the highest utility. However, Mahapatro discloses assignments with a high priority placed in a first group, with medium priority in a second group, and low priority placed in a third group (column 14, lines 25-29), and reversing the order of utility is old and well known, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the queue ordered from lowest to highest utility, thus making the system more robust.

8. Claims 20, 21, 26, 29, 31, 34-42, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahapatro, in view of Pareschi et al (USPN 6,725,428).

As per claims 20 and 21, Mahapatro does not explicitly disclose said step of simulating the workings of the system environment and further comprises the step of: a) setting policy database values; b) simulating resultant operations of system agents and software components and viewing the results; c) iterating between steps a and b to view the impact of setting policy

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database variables to various values; and d) using the results of a through c to determine the optimum values to use for the policy values in a live operational system. Pareschi discloses an expanded set of constraints to specify when and under what conditions rules are fired or not fired, wherein the constraints can control scheduling of resources (column 7, lines 4-8). Pareschi also discloses a simulation method (figure 14), including adding constraints to bound the resources (step s4), scheduling the resources (step s6), and deciding whether to accept the schedule (s7), and when the schedule is accepted, sending the plan to the enactment engine (s8). Both Mahapatro and Pareschi are concerned with effective schedule development, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the simulating step in Mahapatro, as seen in Pareschi, thereby increasing the robustness of the Mahapatro system by using simulation to calculate control policy in the system.

As per claim 26, Mahapatro disclose a computer implemented method for managing mobile workers (assignment oriented scheduling, column 7, lines 48-50) in an object oriented programming environment (processes and symbolic representations of computer operations including objects, column 8, lines 14-18 and 44-46) comprising the steps of: classifying within a database of a computer a plurality of target objects corresponding to facilities assets to be worked on by a mobile worker (process 2: generating assignments based on the tasks and resources assigned to those tasks, column 13, lines 12-17); defining the attributes of each target object, including the tasks to be

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performed on each target object (breaking each task into component assignments, wherein component assignments identify the parent task and the assigned resource, column 13, lines 30-33); scheduling mobile workers for the tasks to be performed on target objects by running a rule engine to determine the algorithms (scheduling assignments via an algorithm, column 14, lines 20-22) and heuristics to be used to schedule mobile workers for the tasks to be performed (employ heuristics to assign a priority-order, column 16, lines 35-37).

Mahapatro does not explicitly disclose establishing a simulator database and running a simulator program to establish policy values in a simulation of the working of a system environment to determine optimum policy values for a given business. Pareschi discloses a simulation method (figure 14), including adding constraints to bound the resources (step s4), scheduling the resources (step s6), and deciding whether to accept the schedule (s7), and when the schedule is accepted, sending the plan to the enactment engine (s8). Both Mahapatro and Pareschi are concerned with effective schedule development, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the simulating step in Mahapatro, as seen in Pareschi, thereby increasing the robustness of the Mahapatro system by using simulation to calculate control policy in the system.

Claims 29, 31, and 34-42 are rejected as seen with the corresponding duplicate claims, as seen above.

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Claim 49 is rejected based upon the rejection of claim 26, since it is the system claim corresponding to the method claim.

9. Claims 27, 28, 30, 32, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahapatro, in view of Pareschi, as applied to claims 26 and 43, in further view Lesaint.

The limitations of claims 27 and 28 are rejected as seen above with the corresponding duplicate claims 2 and 3, respectively.

The limitation of claim 30 is rejected as seen above with the corresponding duplicate claim 5.

The limitations of claims 32 and 33 are rejected as seen above with the corresponding duplicate claims 7 and 8, respectively.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Andre et al (USPN 6278978) disclose improving an agent schedule.

-Sisley et al (USPN 5943652) disclose assigning and scheduling resource requests.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre Boyce whose telephone number is (703) 305-1867. The examiner can normally be reached on 9:30-6pm M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (703) 305-9643. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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